

Welcome to the Know Thou Biological Clock Newsletter

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## 1. WHAT IS NEW IN THIS MONTH

Daylight Saving Time (DST) is the practice of setting the clocks forward one hour from standard time during the summer months, and back again in the fall, in order to make better use of natural daylight.

Many countries in the Northern Hemisphere (north of the equator) use DST in the summer time, but not all. Daylight Saving Time usually starts in March-April and ends in September-November when the countries return to standard time, or winter time as it is also known. In the Southern Hemisphere (south of the equator) the participating countries usually start the DST period in September-November and end DST in March-April.

Daylight Saving Time could soon be a thing of the past in Europe. On March 26, 2019, the European Parliament voted in favour of removing DST in the European Union (EU) permanently. When Germany first set the clocks forward on April 30, 1916, it became the first country in the world to use DST on a national level.

US inventor and politician Benjamin Franklin first proposed the concept of DST in 1784, but modern Daylight Saving Time was first suggested in 1895. At that time, George Vernon Hudson, an entomologist from New Zealand, presented a proposal for a 2-hour daylight saving shift.

Less than 40% of the countries in the world use DST. Some countries use it to make better use of the natural daylight in the evenings. The difference in light is most noticeable in the areas at a certain distance from Earth's equator.

Some studies show that DST could lead to fewer road accidents and injuries by supplying more daylight during the hours more people use the roads. Other studies claim that people's health might suffer due to DST changes. DST is also used to reduce the amount of energy needed for artificial lighting during the evening hours. However, many studies disagree about DST's energy savings.

Today clocks are almost always set one hour back or ahead. Throughout history, there have been several variations, like half adjustments (30 minutes) or double adjustment (2 hours). Adjustments of 20 and 40 minutes have also been used.

Chronobiologists all over the world unanimously rejected the idea of DST which has varied implications on the internal clock, most of them we are yet to understand.

We had a ChronoPrakriti workshop after a gap of almost three months, first time outside the Bhide Foundation at the society premises in Kothrud. Total 8 participants attended the workshop which will have two sessions of 3 hrs of each. This is the first-time variation so as to discuss the recommendations on one to one basis. We will come to know the practicality and efficacy of it once we will take the follow up session in coming week.

Introductory course in Chronobiology was started at Bhide Foundation in second week of April and will continue for a month on each weekend. Total 7 participants have enrolled for the course. Masters student could not participate due to examination schedule and we may have a separate course again in the month of May for them.

The next Saturday club open forum meeting is scheduled on 27<sup>th</sup> April, 11.30 am at Bhide Foundation situated within SP college premises. Dr. Amey Shirolkar, post-doctoral fellow at NCCS, will interact with all of us about his doctoral work on metabolomics and prakriti. Surely his work has relevance in what are planning to do in future. This talk was scheduled in last open forum but due to some unavoidable circumstances, he could not deliver the talk and Dr. Sharawati Kamble, Asst. Professor at Ayurved college, Wagholi had agreed to talk on Prakriti on short notice. We are grateful to her for the valuable inputs during the discussion.

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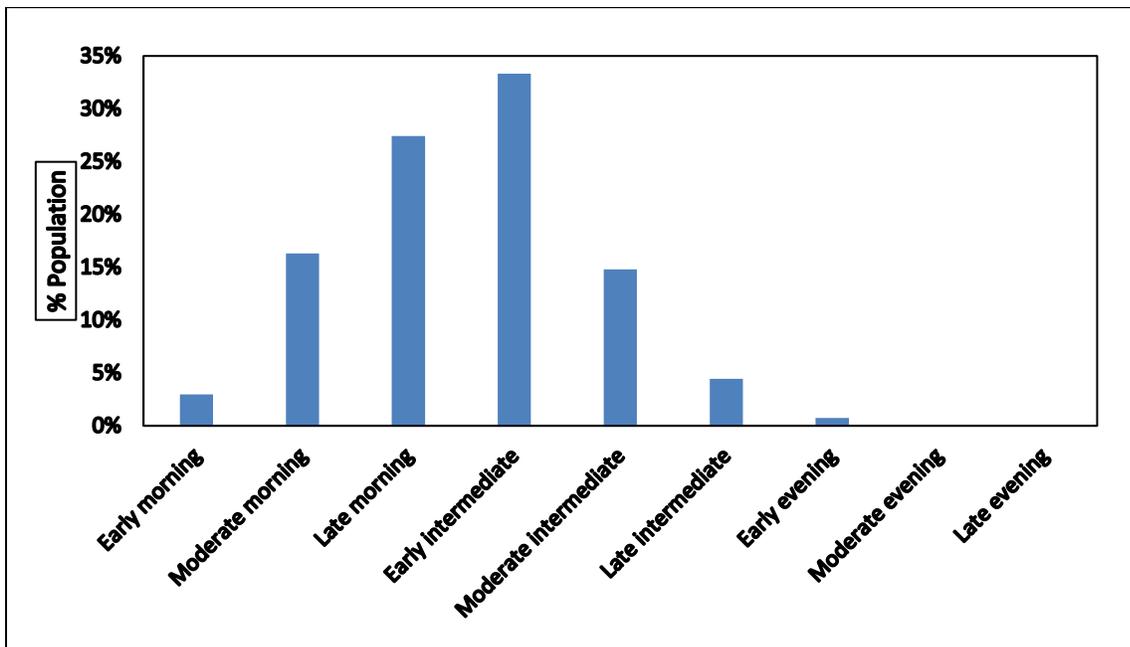
Following are the links for your active participation in the subject. If you wish to understand functioning of your own biological clock, you may enter the data for specific duration in the online google document.

Henceforth compiled data of chronotype assessment of all those who have participated so far will be presented in each newsletter.

### Online Chronotype assessment

Chronotype assessment will inform your natural preference for doing specific task in the day. Knowing your own chronotype (morning/intermediate/evening) will help you to plan your daily schedule more effectively.

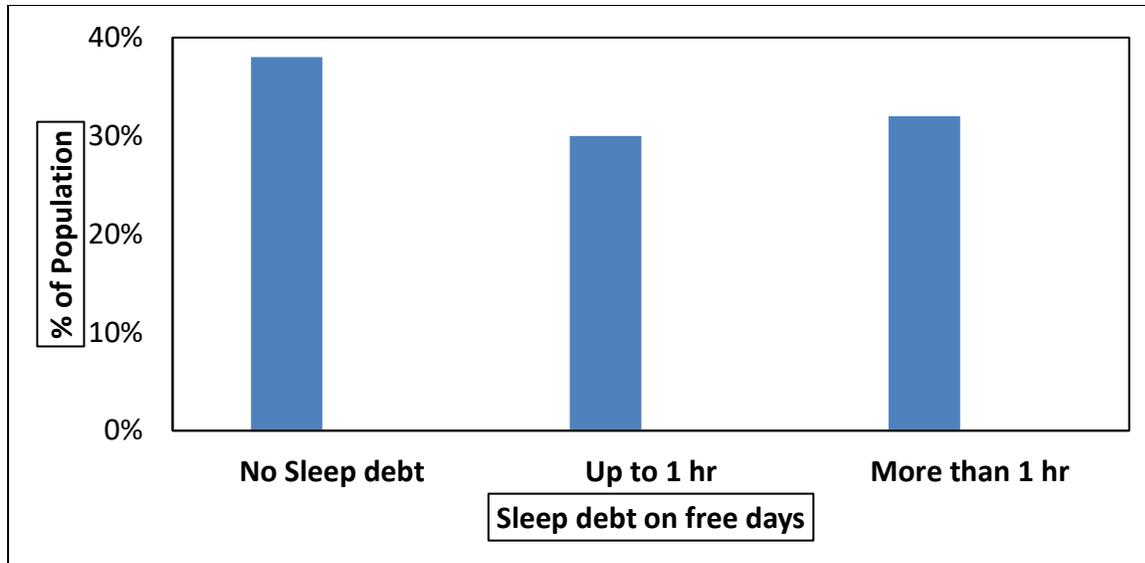
<https://docs.google.com/forms/d/e/1FAIpQLSeiDNAKngayCtQ3M8Ab8wiCq-k84i6O0icb9LU-Ykn10brnJA/viewform?c=0&w=1>



### Online Sleep quality assessment

Sleep quality assessment will inform you the sleep debt you have accumulated due to social and professional commitments. Sleep debt should be more worrisome than financial debt as eventually we are at the losing end in terms of health and money both.

[https://docs.google.com/forms/d/e/1FAIpQLSdK-ngtdFMmiSP093w2IHelyyTcL2I\\_9\\_82UL4Gjs\\_GdidWtw/viewform?c=0&w=1](https://docs.google.com/forms/d/e/1FAIpQLSdK-ngtdFMmiSP093w2IHelyyTcL2I_9_82UL4Gjs_GdidWtw/viewform?c=0&w=1)



## Autorhythmometry

Autorhythmometry is the methodology in chronobiology where a person acts as both researcher and experimental subjects, recording their own rhythms. Recording own rhythms have multiple benefits. Firstly, you are more attentive to your own body language. Secondly, you help body to selfheal without pharmacological intervention. And most important, without disturbing your daily schedule, you can help generating scientific data for research community. For volunteering in Autorhythmometry data collection and analysis please register at:

[https://docs.google.com/forms/d/e/1FAIpQLSfImnKLA8TM\\_9j\\_VuaeNrVHto5phPFWPDh70Rurb6RZGtfeLQ/viewform?c=0&w=1](https://docs.google.com/forms/d/e/1FAIpQLSfImnKLA8TM_9j_VuaeNrVHto5phPFWPDh70Rurb6RZGtfeLQ/viewform?c=0&w=1)

## Online *Prakruti* type assessment

We will be initiating a project of data collection and analysis of chronotype and prakruti type. We are interested in finding correlation if any and whether such data can be utilized to diagnosis. As of now, the final outcome will be by combination of online questionnaire and Nadipariksha by the Ayurvedic doctor. Nadipariksha will be carried out during the workshop. Those who will only fill the online questionnaire and not attending the workshop are requested to take an appointment for Nadipariksha at [chronobiology2017@gmail.com](mailto:chronobiology2017@gmail.com), to get the report. Here is the link for the Prakruti assessment.

[https://docs.google.com/forms/d/e/1FAIpQLSeghxhtuWHfyXOfOh0o11Qqf72PlaNgMgNyfNOobC6QIY-WSg/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSeghxhtuWHfyXOfOh0o11Qqf72PlaNgMgNyfNOobC6QIY-WSg/viewform?usp=sf_link)

## Glossary

Each subject has its own technical terminology. Henceforth we will provide meaning of few terms in this section.

**Acclimatization:** A process consisting of physiological or behavioral changes occurring within the lifetime of an organism that reduce the strain caused by the naturally-occurring changes in climatic factors associated with the seasons

**Adaptation:** A decrease in the responsiveness of a sensory mechanism resulting from previous or continuing stimulation. A process consisting of physiological or behavioral changes, occurring within the lifetime of an organism or as a result of genetic selection in a species, that reduce the strain caused by climatic or non-climatic changes in the environment.

**Anticipatory activity:** Activity exhibited prior to the initiation of a stimulus that is believed to be responsible for the activity. Note: In circadian physiology, the term anticipatory can be misleading. The organism's activity anticipates (precedes) the presentation of the synchronizing stimulus. However, there is no evidence that the anticipation is a volitional psychological state distinct from the phase angle of entrainment determined by the properties of the pacemaker and the zeitgeber.

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## 2. PHYTOMELATONIN AS A NUTRACEUTICAL

Melatonin (N-acetyl-5-methoxytryptamine) is widely known as a biological modulator of circadian rhythms, mood, sleep, body temperature, locomotor activity, food-intake, retina physiology, sexual behaviour, seasonal reproduction and immunological system. Added to this, it is an excellent antioxidant at physiological concentrations. In mammals, melatonin is secreted by the pineal gland into the cerebrospinal liquid and to the bloodstream, maximal levels being reached during the middle of the night. This circadian pattern of melatonin secretion is regulated by the biological clock that resides in mammals within the hypothalamic suprachiasmatic nucleus (SCN).

Phytomelatonin (plant melatonin) is chemically related to the amino acid tryptophan and has many diverse properties. The molecular structure of Phytomelatonin (N-acetyl-5-methoxytryptamine) has an indole amine derivative of the amino acid tryptophan. It is an interesting compound due to its outstanding actions at the cellular and physiological

level, especially its protective effect in plants exposed to diverse stress situations. While melatonin is the term used to name the compound of animal origin or obtained by chemical synthesis, the term Phytomelatonin refers to melatonin of plant origin. Melatonin and Phytomelatonin are synthesized from the amino acid tryptophan in pathways that have been extensively studied in both animals and plants.

The possibility of using Phytomelatonin instead of synthetic melatonin in many applications such as dietary supplements and cosmetic products is a reality. In addition, Phytomelatonin-rich extracts can be used in anti-tumoral treatments. The use of Phytomelatonin instead of synthetic melatonin will ensure that no unwanted by-products are present in melatonin treatments. At present, we are not aware that any such anti-cancer assays are being carried out with Phytomelatonin, but researchers believe that they would provide interesting results.

In addition, it is necessary to ensure that Phytomelatonin-rich products are free of pesticides or other contaminants such as cyanotoxins. Another important step would be to carry out a series of clinical trials to compare the physiological effects of Phytomelatonin-rich products with those obtained using synthetic melatonin. In higher plants, the first identification of endogenous melatonin was described in 1993 by van Tassel and O'Neill in a congress communication. The authors had detected melatonin by radioimmunoassay (RIA) and gas chromatography with mass spectrometry (GC-MS) in the Convolvulaceae ivy, morning glory (*Pharbitis nil* L., syn. *Ipomoea nil* L.) and in tomato fruits (*Solanum lycopersicum*). The possibility of introducing melatonin-rich plants foods into our diet, Contrary to what frequently occurs with dietary supplements, increasing blood melatonin levels through eating natural foods such as plants could be considered a healthy habit.

An oral dose of melatonin of up to 1 gram per day produces no adverse effects in humans. In addition, melatonin is easily absorbed via the gastrointestinal tract. Therefore, its use as a nutraceutical product through the intake of melatonin-rich plants seems to have a promising future as a healthy phytochemical. It would, therefore, seem a worthwhile task to search for plants with high levels of endogenous melatonin that could be used as a natural source of nutraceuticals.

#### References

Arnao MB, Hernández-Ruiz J (2018) Phytomelatonin versus synthetic melatonin in cancer treatments. Biomed Res Clin Prac 3: DOI: 10.15761/BRCP.1000170

Plant-based melatonin: A real alternative to synthetic forms? Will Chu-Nutraingredients.com

Phytomelatonin: Discovery, Content, and Role in Plants, Marino B. Arnao, *Advances in Botany*, Volume 2014, Article ID 815769, 11 pages.

Van Tassel DL, Li J, O'Neii, 1993 Melatonin a potential dark signal in plants, *Plant physiology* 102 Supplement 1, 659

Compiled by: Dr. Meenal Joshi

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### 3. LATEST TREND IN CHRONOBIOLOGY RESEARCH

#### Episodic Ultradian Events—Ultradian Rhythms

In the fast lane of chronobiology, ultradian events are short-term rhythms that have been observed since the beginning of modern biology and were quantified about a century ago. They are ubiquitous in all biological systems and found in all organisms, from unicellular organisms to mammals, and from single cells to complex biological functions in multicellular animals. Since these events are aperiodic and last for a few minutes to a few hours, they are better classified as episodic ultradian events (EUEs). Their origin is unclear. However, they could have a molecular basis and could be controlled by hormonal inputs—in vertebrates, they originate from the activity of the central nervous system. EUEs are receiving increasing attention but their aperiodic nature requires specific sampling and analytic tools. While longer scale rhythms are adaptations to predictable changes in the environment, in theory, EUEs could contribute to adaptation by preparing organisms and biological functions for unpredictability.

Previously neglected as background noise, ultradian rhythms are now in focus of study since their importance is realized as maintaining homeostasis at cellular level, neuronal integrity, and preparedness of a biological-system to respond to stimuli. Hence, Ultradian rhythms are now recognized to 'fine-tune' our biological clock.

*Biology* **2019**, 8(1), 15; <https://doi.org/10.3390/biology8010015>

Compiled by: Miss Ankita Galinde

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#### 4. CHRONOBIOLOGY IN AYURVED – A PERSPECTIVE

Prakriti is one of the most important factors to be examined or to be known for both maintaining the health as well as to treat the illness or to get cure from the illness.

Ayurveda is the ancient traditional science rather it is the oldest way of living life, that first speaks about maintaining health and if at all a person falls sick then its cure. Hence to maintain the health one must know about his or her prakriti.

According to Ayurveda, prakriti is the manifestation of Doshas in Sharira Rachanā (Anatomical expression) as well as in Sharira Kriyā (Physiological expression) This manifestation remains throughout the life.

शुक्रशोणित प्रकृतिं कालगर्भाशय प्रकृतिं मातुः आहारविहार प्रकृतिं महाभूतविकार प्रकृतिं च गर्भशरीरम  
अपेक्षते (च.वि.८।९५)

एतानि हि येन येन दोषेण अधिकेन एकेन अनेकेन वा समनुबध्यन्ते , तेन तेन दोषेण गर्भोऽनुबध्यन्ते,  
ततः सा सा दोषप्रकृतिः उच्यते मनुष्याणां गर्भादिप्रवृत्ता ।

There are four factors which influence the dominance of Doshas during the formation of prakriti. This prakriti is formed during the development of the foetus and gets fixed at the time of birth. The factors which influence it are follows:

- Shukra shonit prakriti (शुक्र शोणित प्रकृति )
- Kālagarbhāshaya prakriti (कालगर्भाशय प्रकृति )
- Mātru āhāra vihāra prakriti (मातृ आहार विहार प्रकृति)
- Mahābhuta vikāra prakriti (महाभूत विकार प्रकृति)

#### **Shukra shonit prakriti :-**

The Dosha dominance in the Shukra (Paternal seed / spermatozoa) and the Dosha dominance in the Shonita (Maternal seed / ovum) contribute in the Dosha in the foetus.

#### **Kālagarbhāshaya prakriti :-**

Here the dominance of Dosha is due to Kāla (season) and the period of time in day and night. The time of conception also influence the Dosha in the formation of Prakriti of the foetus.

### **Mātu āhāra vihāra prakriti :-**

For the period of 9 months foetus remains in the womb of the mother and develops on the food and activities of the mother, the nature of the food and activities of the mother also influence the Dosha in the formation of the Prakriti of the foetus.

### **Mahābhuta vikāra prakriti :-**

The last but not the least is Mahābhuta vikāra prakriti.

This is the dominance of the Mahābhutas in the foetus which is unique for each individual is also responsible for the formation of the Prakriti of the foetus.

These four factors play the crucial role in developing the Prakriti of an individual. If we give equal weightage to each factor it means each factor contribute 25% in the process. Among these there are 75% of the factors can be modified by intervention, only MahābhutaVikāra is the factor which is fixed for each individual.

Once the birth takes place the Prakriti becomes fixed. It can be Eka Doshaja (Dominance of one Dosha Kapha / Pitta /Vāta), it can be Dvidoshaja (Dominance of two Doshas like Kapha vātaja, Kapha Pittaja, Pitta Kaphaja etc. and very rarely Samadhātuja i.e all three Doshas in equal proportions

In Prakriti Parikshana, Charakacharya has mentioned some different gunas or characteristics which can be assessed or examined by any of the three ways-

- Darshana-by observing
- Sprashana-by touching
- Prashna-by asking the individuals

For example, Sukumar body is the characteristics of Kapha Prakriti due to Mrudu guna and Pitta Prakriti due to Ushna Guna, so merely by observing or on seeing the question we cannot rule out the Dosha, we have to see the Ushnatā by Sparshana and also Mrudutā by Sparshana only. There are so many things in which it is needed to have combine efforts to come to the conclusion of Prakriti of any individual. Thus we can reach closer to the Prakriti of the individual.

Complied by: Vaidya Sharavati Kamble

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## 5. SITE OF THE MONTH

<https://cet.org/>

The mission of the Center for Environmental Therapeutics (CET) is to serve patients, consumers, health care providers and workplace managers as it:

- Educates the public, students, and professionals about effective use of environmental therapies.
- Offers authoritative information on non-medication treatments for seasonal affective disorder, nonseasonal depression, and circadian rhythm sleep disorders.
- Fosters research on environmental interventions that promote alertness, energy, and performance—while combating fatigue, stress, depression, and sleep disturbances that affect millions of people.

The Center for Environmental Therapeutics is a 501(c)(3) non-profit organization founded in 1994 in response to accelerating international interest in new environmental therapies.

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## 6. CHRONOBIOLOGY FOR STUDENTS

For school and college students – Importance of Sleep

Sleep seems to provide some kind of essential nourishment for the brain, particularly in kids, as they require considerably more sleep than adults. In fact, sleep is said to be the primary activity of young and developing brains. A typical 3-year-old has spent more time in his life sleeping than doing awake activities. Kids (of any age) who get inadequate sleep tend to be moody, have poor concentration, learn less well and have trouble doing just about everything that involves the brain. (An interesting recent study in adults suggested that sleep is the trigger for creative thinking and creative problem-solving. And many of us can remember times that we finally figured out the solution to a perplexing problem the morning after a good night's sleep!).

Sleep needs differ from child to child, as they do among adults. On average, newborn infants need about twice as much sleep as adults: 17 hours for babies versus 8 hours for adults. By the first birthday, daily sleep needs have decreased to about 13 or 14 hours a day, and by school entry (age 5), 11 hours is about right. Pre-teens may get by with no more than 8 1/2 hours a night.

What is surprising, however, is that sleep needs increase in early adolescence, the typical teenager needing slightly over 9 hours per night. It is tempting to attribute this increased need for sleep to teenage brains once again going into a phase of rapid development and maturation toward adulthood.

#### Holiday and Vacations Tips

- Stay on schedule!
- Respect routines and rituals!
- Avoid overstimulation!

<https://www.alaskasleep.com/blog/kids-sleep-and-the-holidays>

For university students – Career in Chronobiology

Centre for Sleep and Circadian Biology

<http://www.cscb.northwestern.edu/>

The Center for Sleep & Circadian Biology (CSCB) is a University Research Center that integrates basic, clinical and translational research on sleep and circadian rhythms into a unified program at Northwestern University. The Center provides administrative support for trans-departmental and trans-school collaborative research projects.

Researchers at CSCB have been at the forefront not only of understanding the "clock" mechanism but of its medical relevance. Discoveries at CSCB have included:

- Identification of the first mammalian circadian clock gene
  - Discovery of the sleep-regulatory function of clock genes
  - Demonstrating the critical role of circadian timing in obesity and metabolism
  - Elucidating a role for circadian clocks in neurodegeneration
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## 7. CHRONOBIOLOGY FOR PROFESSIONALS

### Napping Lowers Blood Pressure as Much as Medication

Millions of people throughout the world struggle with high blood pressure, or hypertension. Hypertension becomes more common as people grow older and their arteries grow more brittle. Although it is normal for blood pressure to rise as we age, the negative effects of hypertension are undeniable.

High blood pressure is a crucial health risk. Our veins and arteries are like pipes. Increased pressure increases the chance of leaks, which can be fatal in human anatomy. When the delicate, thin-walled vessels of our brain have a leak, the result is a stroke. In other areas of the body, this can lead to a deadly heart attack or a serious bleed.

People with high blood pressure are at higher risk of a variety of diseases, from stroke and heart attack to kidney failure, eye damage and sexual dysfunction. We depend on our cardiovascular system to deliver blood to all of our organs, so a compromise of this system can have a variety of effects on almost every system of our body.

Controlling high blood pressure is essential to maintaining good health. Most modern doctors rely on lifestyle changes and medications to keep blood pressure within a healthy range. However, simply taking a nap may have similar effects

Exactly how much can napping reduce blood pressure? Just sixty minutes of sleeping in the afternoon can lead to a decrease of about 3 mmHg. Even a short nap may have huge health effects. Although this decrease may seem small, it can have a significant effect on health risk. A decrease of just 2 mmHg can mean as much as a 10 percent decrease in the risk of heart attack and other deadly complications. People who are taking the gold standard of anti-hypertensive medications may have the same reduction in blood pressure seen in people who merely sneak a few minutes of slumber in the afternoon.

This is significant because the most common blood pressure medications have serious side effects. They can cause dehydration, severe coughs and a variety of other unwanted health effects. Napping, on the other hand, does not have negative side effects. In fact, according to a wide body of recent research, napping may actually be good for you in a variety of ways.

Albert Einstein and Thomas Edison are famous fans of the mid-afternoon sleep. This is not surprising to modern researchers. Napping has been found to make us more alert and to improve alertness.

The many evidence-based benefits include:

- increased alertness
- better memory, both long-term and short-term
- reduced risk of heart disease
- less stress, including lower levels of stress hormones
- lower weight, with a lower risk of weight gain
- increased immune response to bacteria and viruses
- improved physical performance
- better response to sensory input
- improved decision-making
- enhanced creativity

<https://www.chronobiology.com/napping-lowers-blood-pressure-as-much-as-medication-says-new-study/>

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## 8. CHRONOPRAKRITI DIET PLAN

Chronobiologists prescribes 'Chronodiet' which is consuming carbohydrates in the morning, a mixture of protein and carbohydrates for lunch and just protein for dinner. This prevents an overproduction of insulin (provided you abstain from snacks). The insulin is out of the bloodstream by night-time, thus triggering fat burning. Fat then becomes free fatty acids that are converted into energy.

The time schedule will be:

Breakfast – five hours fasting – Lunch – five hours fasting – Dinner – 12 hours fasting

Ayurvedic practitioners insists that the diet must be personalized based on the prakriti and season.

We bring the best of both the world to you.

Recipe of the month –

### **1) Sprouted Moong Chat**

Ingredients:

2 cups Green Moong Sprouts

1 white Onion, finely chopped

1 Tomato, finely chopped

1 cucumber, finely chopped  
1/2 cup Anardana Powder (Pomegranate Seed Powder)  
3 teaspoons Chaat Masala Powder  
2 tablespoons Lemon juice  
Salt, as required  
Green Chutney (Coriander & Mint), as required  
Sweet Chutney (Date & Tamarind), as required  
2 spoon Mint Leaves (Pudina), chopped  
2 spoon Coriander (Dhania) Leaves, chopped

Recipe:

1. Steam the moong sprouts for 3 to 4 minutes (they should still retain the crunch).
2. Cool completely and drain water.
3. In a mixing bowl add the sprouts, onion, tomato, pomegranate seeds, chaat masala, lime juice and some salt.
4. Add a teaspoon of both the chutneys. Mix everything well.
5. Take out in serving bowls. Top with both the chutneys and serve garnish with mint and coriander leaves.

## **2) Jaljeera Lemonade (Mint flavoured)**

Ingredients:

1/2 cup lemon juice  
2 tsp jal jeera powder  
1/2 tsp roasted cumin seeds ( jeera) powder  
4 tsp sugar / as per taste  
1/4 tsp / as per taste

Recipe:

1. Combine all the ingredients along with 4 cups of cold water in a deep bowl and mix well.
2. Pour equal quantities of the drink into 4 individual glasses.
3. Add few fresh crushed mint (Pudina) leaves and serve chilled.

Nutrient values per glass: Energy 24 cal Carbohydrates 26.4 g Vitamin C 28.9 mg  
Sodium 193.8 mg

Compiled by: Mrs. Manjusha Savardekar & Vaidya Hemangi Sutar

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## 9. TUNE YOUR CLOCK – GAMES / MEDITATION TECHNIQUES

Like deep sleep, observing oneself also is also the best method for tuning of your clock. Unfortunately, we are so much engrossed into daily life, we forgot to take a pause and look as if we are looking into the mirror. Meditation techniques are the possible way for witnessing yourself. You may practice meditation either for spiritual experiences or for mundane physical benefits, the technique will remain same.

**AS BREATH TURNS FROM DOWN TO UP, AND AGAIN AS BREATH CURVES FROM UP TO DOWN  
-- THROUGH BOTH THESE TURNS, REALIZE**

The outgoing and ingoing breath make a circle. Remember, these are not two parallel lines. We always think of them as two parallel lines -- breath going in and breath going out. Do you think that these are two parallel lines? They are not. Breath going in is half the circle; breath going out is the other half of the circle.

Why put such emphasis upon turning? If you know driving, you know about gears. Each time you change the gear, you have to pass through the neutral gear, which is not a gear at all. From the first gear you move to the second or from the second to the third, but always you have to move through the neutral gear. That neutral gear is a turning point. In that turning point the first gear becomes the second and the second becomes the third. When your breath goes in and turns out, it passes through the neutral gear; otherwise it cannot turn out. It passes through the neutral territory.

In that neutral territory you are neither a body nor a soul, neither physical nor mental, because the physical is a gear of your being and the mental is another gear of your being. You go on moving from gear to gear, but you must have a neutral gear where you are neither body nor mind. In that neutral gear you simply are: you are simply an existence -- pure, simple, unembodied, with no mind.

That is why there is the emphasis on the turn. Man is a machine -- a large, very complicated machine. You have many gears in your body, many gears in your mind. You are not aware of your great mechanism, but you are a great machine. And it is good that you are not aware; otherwise you could go mad. The body is such a great machine that scientists say if we had to create a factory parallel to the human body, it would require four square miles of land, and the noise would be such that one hundred square miles of land would be disturbed by it.

The body is a great mechanical device -- the greatest. You have millions and millions of cells and each cell is alive. So, you are a big city of seventy million cells; there are seventy million citizens inside you, and the whole city is running very silently, smoothly.

Every moment the mechanism is working. It is very complicated. For example, in the night when you drop into sleep you change gears, because during the day you need a different mechanism for a waking consciousness -- a different part of the mind functions. Then you drop into sleep, and that part becomes non-functioning. Another part of the mind begins to function, and there is a gap, an interval, a turning. A gear is changed. In the morning when you are again getting up, the gear is changed. You are silently sitting, and suddenly someone says something, and you get angry -- you move into a different gear. That is why everything changes.

A car is standing... you start it. Do not put it in any gear, let it be in neutral. It will go on pulling, vibrating, trembling, but it cannot move; it will get hot. That is why, when you are angry and you cannot do something, you will get hot. The mechanism is ready to run and do something and you are not doing -- you will get hot. You are a mechanism, but, of course, not only a mechanism. You are more, but the "more" has to be found. When you get into a gear, everything changes inside. When you change the gear, there is a turning.

Be aware at the turn. But it is a very short turn; very minute observation will be needed. And we are just without any observing capacity; we cannot observe anything. We are not aware; we are not alert; we cannot pay attention to anything. We just go on jumping. This is part of our heritage, our monkey heritage. Our mind is just the growth of the monkey mind, so the monkey moves on. He goes on jumping from here to there. The monkey cannot sit still. That is why Buddha insisted so much on just sitting without any movement, because then the monkey mind is not allowed to go on its way.

Why are these turnings so important? They are important because on turning, the breath leaves you to move in a different direction. If breathing is life, then you are dead; if breathing is your body, then you are no-body; if breathing is your mind, then you are no-mind... in that moment.

if you stop your breath, the mind stops suddenly. If you stop your breath just now, your mind will stop suddenly; the mind cannot function. A sudden stoppage of breath and the mind stops. Why? Because they are disjoined. Only a moving breath is joined with the mind, with the body; a non-moving breath is disjoined. Then you are in the neutral gear. The car is running, the power is on, the car is making a noise -- it is ready to go forward -- but it is not in gear, so the body of the car and the mechanism of the car are not joined. The car is divided into two. It is ready to move, but the moving mechanism is not joined with it.

The same happens when breath takes a turn. You are not joined with it. In that moment you can easily become aware of who you are. What is this being? What is it to be? Who

is inside this house of the body? Who is the master? Am I just the house or is there some master also? Am I just the mechanism or does something else also penetrate this mechanism?

[http://www.oshoworld.com/tantra\\_medi/otantra.asp?news\\_id=2](http://www.oshoworld.com/tantra_medi/otantra.asp?news_id=2)

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## 10. SUPPORT KNOW THOU BIOLOGICAL CLOCK

To ensure that this activity stays available, we need your help

- Please send this newsletter to your contacts (*cc'ing me for further follow up*)
  - Please arrange virtual or on-site introductory talk / workshop about the subject for various groups such as students / professional colleagues / neighbours
  - Please contribute writing in the newsletter in context of the subject
  - You can take freely available online 'Chronotype Assessment Test'
  - You can be a volunteer and submit your daily schedule to us for generating database for future circadian medicine (*link available at the beginning of the newsletter*)
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## 11. ANNOUNCEMENTS

- Chronobiology open forum – 27<sup>th</sup> Apr 11.30 am, SP college campus
  - Workshop for school students – 20<sup>th</sup> May, Details awaited
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Your comments and suggestions about this newsletter are always welcome. This newsletter is always evolving — tell us what you think!

Thanks for reading!

If there are any specific topics that you would like to see here, you are most welcome to contribute and/or let me know.

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